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(54) Method for storing seedling, nursery plant and bulb.

(57) A method enabling the storage of a seedling, a nursery plant or a bulb for a long period under an ordinary temperature condition comprises immersing the seedling, nursery plant or bulb in a solution containing a growth inhibitor or an osmoregulator. The treated seedling, nursery plant or bulb can be placed in a suitable container and preserved at an ordinary temperature.

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Description

METHOD FOR STORING SEEDLING, NURSERY PLANT AND BULB

BACKGROUND OF THE INVENTION

This invention relates to a method for storing a seedling, a nursery plant and a bulb. More specifically, this invention relates to a method for storing a seedling, a nursery plant and a bulb immersed in a prescribed solution over a long period in a prescribed container.

In order to produce a cut flower, a potted flower and the like year-roundly, the cultivation of a seedling, a nursery plant and a bulb thereof as materials at periods other than a period suitable for the cultivation thereof has been so far carried out. In this case, it is required to store the seedling, the nursery plant and the bulb for the cultivation period. When the storage extends over a long period, the respiratory consumption is high and the growth of a plant body is initiated to cause germination and rooting. In order to control the oxygen respiration, the germination and the rooting as above, the storage is required to be carried out under a low temperature condition or by controlling the oxygen concentration. For these purposes, storage using a refrigerator, a cooler and the like and CA storage are carried out. However, these storing methods require a sizable expenditure on equipment, electricity and the like. In such circumstances, such storage methods are employed not in the stages of a common retailer and a common consumer but solely in the stage of a producer.

SUMMARY OF THE INVENTION

Based on the recognition that the conventionally known methods for storing a seedling, a nursery plant and a bulb have the foregoing various problems, the present inventors have made a study of a method capable of dissolving the problems, making the storage of these plant bodies at an ordinary temperature possible to thus enable to reduce the expenditure in comparison with the conventional methods and being readily usable in the stages of a common retailer and a common consumer.

As the result, they have found that the foregoing purpose can be attained by adopting the following method to complete the present invention.

That is, the gist of the present invention lies in the provision of a method for storing a seedling, a nursery plant and a bulb characterized by immersing a seedling, a nursery plant and a bulb of a plant in a solution containing a growth inhibitor or an osmoregulator, sealing thus treated seedling, nursery plant and bulb in a prescribed container together with a suitable moisture retainer and then storing the sealed seedling, nursery plant and bulb at an ordinary temperature.

According to the present method, a seedling, a nursery plant and a bulb of a plant can be stored even at an ordinary temperature to sharply reduce expenditures for storing, as compared with the conventional storing methods by which not only the

freshness of a seedling, a nursery plant and a bulb is forced to be maintained under a low temperature condition over a long period but also the initiation of growth is uncontrollable. In addition, the present invention makes the storage under an ordinary temperature condition possible, so that a seedling, a nursery plant and a bulb can be easily stored at a retail store or a common consumer's house over a long period to bring about the possibility that the distribution system of a seedling, a nursery plant and a bulb may be innovated into more flexible one.

DETAILED DESCRIPTION OF THE INVENTION

As previously noted, the present invention provides a method for storing a seedling, a nursery plant and a bulb over a long period under an ordinary temperature condition by immersing the seedling, the nursery plant and the bulb in a solution containing a growth inhibitor or an osmoregulator, sealing thus treated seedling, nursery plant and bulb in a container together with a suitable moisture retainer and then preserving the sealed seedling, nursery plant and bulb under an ordinary temperature condition.

As a growth inhibitor to be used in the present storage method by dissolving in an immersing solution, a conventionally known plant growth inhibitor can be used. As specific examples thereof, dormant hormones such as abscisic acid, etc. and elongation retardants such as CCC, B-nine, ancymidol, etc. can be enumerated.

As an osmoregulator to be used in the present method by dissolving in an immersing solution, a conventionally known osmoregulator can be used. As specific examples of the osmoregulator, sucrose, glucose, fructose, mannose, sorbitol, mannitol, etc. can be enumerated.

A plant to which the present method can be applied is not restricted particularly, so that any of plants to which the low temperature storage has been so far applied can be stored by using the present method. In the present invention, a white trumpet lily, a speciosum lily, a Thunberg lily, a tulip, a gladiolus, a bulbous iris, a carnation, a gypsophilla, etc. can be exemplified as the plant. Incidentally, these plants can include small plant bodies thereof proliferated by the tissue culture other than those obtained by usual open cultivation.

As a container to be used in the present invention for sealing a plant body therein, any container having oxygen permeability and capability of maintaining humidity properly will do. As examples of the container, polypropylene bag and the like can be enumerated in the present invention.

As a moisture retainer to be used in the present invention, the conventionally known materials such as bog moss, sawdust, vermiculite, etc. can be employed.

As a method for immersing a seedling, a nursery plant and a bulb in a solution containing a growth inhibitor to be conducted in the present invention, a

method in which the whole plant body is immersed in a solution containing the above growth inhibitor for a period of 1 hour to 1 week, preferably of 24 hours to 3 days and nights can be exemplified.

In the present invention, a growth inhibitor is made to have a concentration ranging from 1 to 1,000mg/ℓ, preferably 10 to 100mg/ℓ. In case of the concentration being high, the growth after the takeout of a plant body from a container is often inhibited, so that it is preferred that the concentration is selected from the above range.

As a method for immersing a seedling, a nursery plant and a bulb in a solution containing an osmoregulator to be conducted in the present invention, a method in which the whole plant body is immersed in a solution containing the above osmoregulator for a period of 1 hour to 1 week, preferably of 24 hours to 3 days and nights can be exemplified. In the present invention, the concentration of an osmoregulator is adjusted to be in the range of 5 to 10atm.

EXAMPLE

Hereinafter, the present invention will be described more specifically, referring to examples.

Example 1

5~7mm diam. white trumpet lily bulbs proliferated by tissue culture were immersed in a solution containing 20mg/ℓ abscisic acid for 24 hours and then washed with running water. Thus treated bulbs were respectively embedded in vermiculite containing moisture properly, sealed in polypropylene bags and then stored at an ordinary temperature (24~26°C) for 3 months. As controls, bulbs immersed in distilled water for 24 hours were used.

After 3 months, the ratio of bulbs having leaves elongated to a length of 0.5cm or more was examined. As the result, it was found that the leaf emergence ratio of bulbs immersed in an abscisic acid solution was 0%, whereas that of bulbs immersed in distilled water was 100% because the growth initiation could not be controlled.

Incidentally, bulbs whose growth initiation was controlled by immersing in an abscisic acid solution and then storing at an ordinary temperature were planted in pots and then grown in a greenhouse regulated to 23°C. As the result, leaves emerged from the bulbs and grew normally and flowered after 5 months.

Example 2

The procedure was repeated in the same manner as in Example 1, except that a solution containing 20mg/ℓ CCC [(2-chloroethyl)trimethylammonium chloride] instead of abscisic acid as a plant growth inhibitor was used and the storage period was set to 2 months.

As a result of examining the ratio of bulbs having leaves elongated to a length of 0.5cm or more, the leaf emergence ratio of bulbs immersed in a CCC solution was 50%, whereas that of bulbs immersed in distilled water was 87.5%.

Example 3

5~7mm diam. white trumpet lily bulbs proliferated by tissue culture were immersed in a solution containing 10atm. sucrose for 24 hours and then washed with running water. These bulbs were respectively embedded in vermiculite containing moisture properly, sealed in polypropylene bags and then stored at an ordinary temperature (24~26°C) for 2 months. As controls, bulbs immersed in distilled water for 24 hours were used.

After 2 months, the ratio of bulbs having leaves elongated to a length of 0.5cm or more was examined. As the result, the leaf emergence ratio of bulbs immersed in a solution containing 10atm. sucrose was 20%, whereas that of bulbs immersed in distilled water was 87.5%.

Example 4

5~7mm diam. white trumpet lily bulbs proliferated by tissue culture were immersed in a solution containing 10atm. sorbitol for 24 hours and then washed with running water. These bulbs were respectively embedded in vermiculite containing moisture properly, sealed in polypropylene bags and then stored at an ordinary temperature (24~26°C) for 2 months. As controls, bulbs immersed in distilled water for 24 hours were used.

After 2 months, the ratio of bulbs having leaves elongated to a length of 0.5cm or more was examined. As the result, the leaf emergence ratio of bulbs immersed in a solution containing 10atm. sorbitol was 33.3%, whereas that of bulbs immersed in distilled water was 87.5%.

Claims

1. A method of improving the storage stability of a seedling, a nursery plant or a bulb, which comprises immersing the same in a solution containing a growth inhibitor or an osmoregulator.
2. A method according to Claim 1, wherein the growth inhibitor is a dormant hormone.
3. A method according to Claim 2, wherein the dormant hormone is abscisic acid.
4. A method according to Claim 1, wherein the growth inhibitor is an elongation retardant.
5. A method according to Claim 4, wherein the elongation retardant is CCC.
6. A method according to Claim 1, wherein the osmoregulator is sucrose.
7. A method according to Claim 6, wherein the osmoregulator is sorbitol.
8. A method according to any one of the preceding claims, wherein there is used a bulb of a white trumpet lily.
9. A method according to any one of the preceding claims comprising the additional step of storing the treated seedling, nursery plant or bulb.



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 30 1009

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
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X	WO-A-8 701 258 (PLANT GENETICS INC.) * Page 16, line 1 - page 17, line 14; claims *	1,9	
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A	R. WEGLER: "Chemie der Pflanzenschutz- und Schädlings-bekämpfungsmittel", vol. 4, 1977, Springer-Verlag, Berlin, DE * Pages 33-37, section 8 *	1-5	
A	US-A-3 826 639 (E.H. POMMER et al.) * Whole document *	1-9	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	CHEMICAL ABSTRACTS, vol. 89, no. 9, 28th August 1978, page 141, no. 71954n, Columbus, Ohio, US; R.S. MISHRA et al.: "Effect of ethrel, cycocel and maleic hydrazide in the storage of onion", & J. SCI. RES. BANARAS HINDU UNIV. 1977, 27(1-2), 25-7 -----	1-9	A 01 N
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-05-1989	Examiner FLETCHER A.S.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			